University of California
College of Agriculture
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Berkeley, California

SEASONAL LABOR NEEDS FOR CALIFORNIA CROPS

KINGS COUNTY

Progress Report No. 16

by

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(Farm Labor Survey -- July-December, 1936)

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Scope of Presentation.-- The following considerations govern the presentation of this progress report:

1. The data are confined to the area indicated above.

2. The data are confined solely to crops, livestock needs being ignored.

3. The findings apply only to occasional or seasonal labor requirements as distinguished from labor contributed by farm operators and by workers employed on a year-round or regular basis of employment.

4. Attention is concentrated upon workers required for hand tasks -- planting, thinning, weeding, hoeing, and harvesting -- without including teamsters, tractor drivers, irrigators, and shed packers of vegetables or fruits.

5. The presentation includes the so-called migratory, transient, or roving workers which comprise an important source of help needed in connection with certain tasks and at "peak" times which seasonally arise in connection with many field, truck, and fruit crops commercially produced in California.

6. This report is confined to California's need for seasonal agricultural workers because of the more pressing problems liable to arise in connection therewith. A later study is planned which will deal with other kinds of labor involved in the production of California's many crops.

Crops, Acreages, and Production.-- The basis used in calculating occasional or seasonal need for labor, in addition to that furnished by farm operators and regularly employed workers, appears as table 1.

TABLE 1

Basis for Calculating Seasonal Labor Requirements
Kings County

Crops	Acreage*	Production †
Field crops:		
Alfalfa	20,100	83,337 tons
Cotton	17,700	20,479 bales ‡
Grain -- barley	22,880	1,155,529 bushels
oats	574	16,387 bushels
wheat	41,945	1,621,143 bushels
Hay -- tame and "volunteer"	8,768	11,689 tons
Sorghums for grain	5,376	112,647 bushels
Flax	2,500 §	Average 11 bushels per acre
Vegetable crops: ¶		
None reported		

Table continued on next page.

(Farm Labor Survey -- July-December, 1946)

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Crops, Acreages, and Production.-- The basis used in calculating seasonal or seasonal need for labor, in addition to that furnished by farm operators and regularly employed workers, appears as table 1.

TABLE 1

Basis for Calculating Seasonal Labor Requirements
Kings County

Crops	Acreage*	Production†
Field crops:		
Alfalfa	30,100	88,857 tons
Cotton	17,700	20,472 bales‡
Grain -- barley	22,880	1,156,629 bushels
oats	574	16,587 bushels
wheat	61,948	1,821,142 bushels
Hay -- tame and "volunteer"	8,765	11,889 tons
Sorghums for grain	8,578	112,847 bushels
Flax	2,800?	Average 11 bushels per acre
Vegetable crops:¶		
None reported		

Table continued on next page.

Table 1 continued.

Crops	Acreage*	Production †
Fruit and nut crops:		
Apricots	3,611	14,400 tons dried (fresh weight) = 2,400 tons dry ‖ 3,655 tons sold fresh
Grapes -- Thompson	2,295	4,000 tons raisins (dry weight)
Muscat	9,660	50,000 tons for juice
miscellaneous	1,126	12,500 tons shipped
Olives	272	490 tons for canning) 53 tons not for canning) 543 tons total**
Peaches -- clingstone	382	1,910 tons
freestone	2,875	3,000 tons (dry weight) dried ‖ 1,000 tons sold fresh
Plums	146	438 tons (all shipped)
Prunes	457	650 tons ¶ (dry weight) ‖
Walnuts	406	171,100 pounds merchantable 35,100 pounds culls estimated ††

* Acreage data is from L. O. Haupt, Agricultural Commissioner, Kings County.

† Due to lack of assembled data, production figures are estimates compiled from various sources.

‡ Data from California Cooperative Crop Reporting Service -- Final California Cotton Report for the 1935 Crop -- Sacramento, May 26, 1936, 1p.

§ Considerably more flax was planted but was not harvested due to weeds, etc. Probably 3,000 acres in 1936.

¶ Prune crop unusually heavy in 1935 -- normally about 500 tons.

‖ Drying ratios used in this report are:

Apricots -- 5 1/2 to 1
Peaches -- 5 1/2 to 1
Raisins -- 4 to 1
Prunes -- 3 1/2 to 1

** Olive production is an estimate by California Olive Association for 1935 Crop.

†† Data from Walnut Control Board. Culls estimated to be 17 per cent of total crop (state average).

Operations Requiring Seasonal Labor and Times of Need.-- Farm operations requiring the use of seasonal or occasional labor for the various crops raised in Kings County are indicated in table 2. This tabulation does not include the employing of shed workers needed to wash, pack, and prepare various commodities for shipping and marketing.

Table 1 continued.

Crops	Acreages	Production †
Fruit and nut crops:		
Apricots	3,812	14,400 tons dried (fresh weight) = 2,900 tons dry ¶
		3,655 tons sold fresh
Grapes -- Thompson	2,295	4,000 tons raisins (dry weight)
Muscat	9,880	80,000 tons for juice
miscellaneous	1,129	12,800 tons shipped
Olives	272	490 tons for canning 83 tons not for canning) 813 tons total*
Peaches -- clingstone	582	3,910 tons
freestone	2,876	6,000 tons (dry weight) dried ¶
		1,000 tons sold fresh
Plums	140	458 tons (all shipped)
Prunes	457	850 tons ¶ (dry weight) ¶
Walnuts	408	171,100 pounds marketable 36,100 pounds culls estimated ††

* Acreage data is from L. C. Hadge, Agricultural Commissioner, Tulare County.

† Due to lack of assembled data, production figures are estimates compiled from various sources.

‡ Data from California Cooperative Crop Reporting Service -- final California Cotton Report for the 1956 crop -- Sacramento, May 26, 1956, 1p.

¶ Considerably more flax was planted but was not harvested due to weeds, etc. Probably 3,000 acres in 1956.

¶ Prune crop unusually heavy in 1956 -- normally about 500 tons.

¶ Drying ratios used in this report are:

Apricots -- 5 1/2 to 1
Peaches -- 5 1/2 to 1
Raisins -- 4 to 1
Prunes -- 3 1/2 to 1

** Olive production is an estimate by California Olive Association for 1956 crop.

†† Data from Walnut Control Board. Culls estimated to be 17 per cent of total crop (state average).

Operations Requiring Seasonal Labor and Times of Need -- Farm operations requiring the use of seasonal or occasional labor for the various crops raised in Tulare County are indicated in table 2. This tabulation does not include the cultivating or other workers needed to wash, pack, and prepare various commodities for shipping and marketing.

TABLE 2

Operations Requiring Use of Seasonal Labor and Times of Needs by Crops
Kings County

Crop	Operation	Time of need	Per cent of work done by seasonal help	Output per man-day
Field crops: Alfalfa* (50 per cent of acreage)	Mowing and raking (5 cuttings)	April -- 30 per cent of acreage May -- 90 per cent of acreage June -- 90 per cent of acreage July -- 90 per cent of acreage August -- two-thirds of acreage September -- two-thirds of acreage October -- two-thirds of acreage	50	8 acres mowing 16 acres raking
	Shocking by hand	Same as above	50	5 acres
Based on 50 per cent of total crop	Stacking -- 80 per cent of crop	May -- 20 per cent of job June -- 20 per cent of job July -- 20 per cent of job August -- 13 per cent of job September -- 13 per cent of job October -- 13 per cent of job	66	4 tons
	Baling -- 20 per cent of crop	Same as stacking	75	5 tons
Cotton	Chopping	April 15-30 -- one-sixth of acreage May 1-31 -- two-thirds of acreage June 1-15 -- one-sixth of acreage	100	2.5 acres
	Irrigating (4 times)	June 1-30 -- four-thirds of acreage July 1-31 -- four-thirds of acreage August 1-31 -- four-thirds of acreage	50	5 acres (in 12 hours)
	Picking †	September 15-30 -- 2 per cent of crop October 1-31 -- 46 per cent of crop November 1-30 -- 29 per cent of crop	100	250 pounds
		December 1-31 -- 11 per cent of crop January 1-31 -- 9 per cent of crop February 1-28 -- 3 per cent of crop	100	200 pounds

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TABLE 2

Operations Requiring Use of Seasonal Labor and Times of Needs by Crops
Kings County

Crop	Operation	Time of need	Per cent of work done by seasonal help	Output per man day
Field crops: Alfalfa (60 per cent of acreage)	Mowing and raking (5 cuttings)	April -- 20 per cent of acreage May -- 20 per cent of acreage June -- 20 per cent of acreage July -- 20 per cent of acreage August -- two-thirds of acreage September -- two-thirds of acreage October -- two-thirds of acreage	20	8 acres mowing 16 acres raking
	Shocking by hand	Same as above	20	8 acres
Based on 20 per cent of total crop	Stacking -- 20 per cent of crop	May -- 20 per cent of job June -- 20 per cent of job July -- 20 per cent of job August -- 15 per cent of job September -- 15 per cent of job October -- 15 per cent of job	20	4 tons
	Baling -- 20 per cent of crop	Same as stacking	75	4 tons
Cotton	Chopping	April 15-30 -- one-sixth of acreage May 1-31 -- two-thirds of acreage June 1-15 -- one-sixth of acreage	100	2.5 acres
	Irrigating (4 times)	June 1-30 -- four-thirds of acreage July 1-31 -- four-thirds of acreage August 1-31 -- four-thirds of acreage	50	5 acres (in 12 hours)
	Picking †	September 15-30 -- 2 per cent of crop October 1-31 -- 46 per cent of crop November 1-30 -- 29 per cent of crop	100	250 pounds
		December 1-31 -- 11 per cent of crop January 1-31 -- 8 per cent of crop February 1-28 -- 3 per cent of crop	100	200 pounds

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Table 2 continued.

Crop	Operation	Time of need	Per cent of work done by seasonal help	Output per man-day
Flax	Harvesting by "combine"	June 1-30 -- 40 per cent of crop July 1-31 -- 40 per cent of crop August 1-15 -- 20 per cent of crop	50	5 acres
Grain	Harvesting by "combine"	May 25-31 -- 10 per cent of acreage June 1-30 -- 40 per cent of acreage July 1-31 -- 40 per cent of acreage August 1-15 -- 10 per cent of acreage	50	7 acres (12 hours)
	Hauling	Same as harvesting	50	300 sacks
Sorghums (for grain)	Hoeing (on 500 acres)	May -- one-third of job June -- one-third of job July -- one-third of job	100	2.5 acres
	Cutting by hand, 10 per cent	September 20-30 -- 10 per cent of job October 1-31 -- 50 per cent of job November 1-30 -- 40 per cent of job	100	0.75 acre
	Harvesting (by combine) 90 per cent	October 1-31 -- 50 per cent of job November 1-30 -- 50 per cent of job	50	5 acres
	Threshing by stationary machine -- 10 per cent	October 1-31 -- 50 per cent of job November 1-30 -- 50 per cent of job	50	30 sacks (of 130 pounds)
Fruit and nut crops: Apricots	Pruning	November -- 10 per cent of acreage December -- 30 per cent of acreage January -- 30 per cent of acreage February -- 30 per cent of acreage	50	0.25 acre
	Brush burning	Same as pruning	25	2 acres
	Spraying -- inconsequential			
	Thinning by hand -- 40 per cent of acreage	April 15-30 -- 50 per cent of job May 1-15 -- 50 per cent of job	90	0.2 acre (15 trees)
	Thinning by poles -- 40 per cent of acreage	April 15-30 -- 50 per cent of job May 1-15 -- 50 per cent of job	50	0.5 acre

Table continued on next page.

Table 2 continued.

Crop	Operation	Time of need	Per cent of work done by seasonal help	Output per man-day
Flax:	Harvesting by "combine"	June 1-30 -- 40 per cent of crop July 1-31 -- 40 per cent of crop August 1-15 -- 20 per cent of crop	80	5 acres
Grain	Harvesting by "combine"	May 25-31 -- 10 per cent of acreage June 1-30 -- 40 per cent of acreage July 1-31 -- 40 per cent of acreage August 1-15 -- 10 per cent of acreage	50	7 acres (12 hours)
	Hauling	Same as harvesting	50	300 sacks
Sorghum (for grain)	Hoeing (on 500 acres)	May -- one-third of job June -- one-third of job July -- one-third of job	100	2.5 acres
	Cutting by hand, 10 per cent	September 20-30 -- 10 per cent of job October 1-31 -- 50 per cent of job November 1-30 -- 40 per cent of job	100	0.75 acre
	Harvesting (by combine) 90 per cent	October 1-31 -- 50 per cent of job November 1-30 -- 50 per cent of job	50	5 acres
	Threshing by stationary machine -- 10 per cent	October 1-31 -- 50 per cent of job November 1-30 -- 50 per cent of job	50	50 sacks (of 130 pounds)
Fruit and nut trees: Apricots	Pruning	November -- 10 per cent of acreage December -- 30 per cent of acreage January -- 30 per cent of acreage February -- 30 per cent of acreage	50	0.25 acre
	Brush burning	Same as pruning	50	2 acres
	Spraying -- inconsequential			
	Thinning by hand -- 40 per cent of acreage	April 15-30 -- 50 per cent of job May 1-15 -- 50 per cent of job	50	0.5 acre (15 trees)
	Thinning by poles -- 60 per cent of acreage	April 15-30 -- 50 per cent of job May 1-15 -- 50 per cent of job	50	0.5 acre

Table 2 continued.

Crop	Operation	Time of need	Per cent of work done by seasonal help	Output per man-day
Apricots (cont.)	Picking for fresh use	May 20-31 -- 25 per cent of job June 1-30 -- 75 per cent of job	100	1,200 pounds
	Picking for drying (15 per cent by hand, 85 per cent by shaking off)	June 7-30 -- 80 per cent of job July 1-4 -- 20 per cent of job	100	1,800 pounds by shaking off; 1,200 pounds by hand
	Cutting for drying	June 7-30 -- 80 per cent of job July 1-4 -- 20 per cent of job	90	750 pounds
	Other dry-yard work	June 7-30 -- 75 per cent of job July 1-10 -- 25 per cent of job	90	11 man-hours per fresh ton†
Grapes	Pruning Thompsons	December 15-31 -- 10 per cent of acreage January 1-31 -- 40 per cent of acreage February 1-28 -- 40 per cent of acreage March 1-15 -- 10 per cent of acreage	75	0.5 acre
	Pruning other varieties	December 15-31 -- 10 per cent of acreage January 1-31 -- 40 per cent of acreage February 1-28 -- 40 per cent of acreage March 1-15 -- 10 per cent of acreage	75	0.66 acre
	Tying (Thompson Seedless)	January 1-31 -- 40 per cent of acreage February 1-28 -- 40 per cent of acreage March 1-15 -- 20 per cent of acreage	50	1.5 acres
	Picking for raisins (Thompsons)	August 1-31 -- all of job	100	3,000 pounds -- about 150 trays
	Picking for shipping (field packing)	September 1-30 -- 12 per cent of job October 1-31 -- 76 per cent of job November 1-30 -- 12 per cent of job	100	30 boxes of 28 pounds

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Table 2 continued.

Crop	Operation	Time of need	Per cent of work done by seasonal help	Output per man-day
Grapes (cont.)	Picking (for winery)	September 15-30 -- 15 per cent of job October 1-31 -- 75 per cent of job November 1-15 -- 10 per cent of job	100	1½ tons
	Turning trays	September 5-30 -- 75 per cent of job October 1-10 -- 25 per cent of job	90	1,500 trays
	Rolling paper trays (50 per cent of crop)	September 15-30 -- one-third of job October 1-31 -- two-thirds of job	75	1,500 trays
	Stacking wood trays (50 per cent of crop)	September 15-30 -- one-third of job October 1-31 -- two-thirds of job	75	1,000 trays
	Boxing and hauling in	September 15-30 -- one-third of job October 1-31 -- two-thirds of job	50	5,000 pounds (dry weight)
Olives	Picking for pickling	September 15-30 -- 15 per cent of job October 1-31 -- 60 per cent of job November 1-21 -- 25 per cent of job	100	400 pounds
	Picking for oil	December -- 25 per cent of job January -- 50 per cent of job February -- 25 per cent of job	100	500 pounds
Peaches	Pruning	December 1-31 -- one-third of acreage January 1-31 -- one-third of acreage February 1-28 -- one-third of acreage	50	0.25 acre
	Brush burning	Same as pruning	25	2 acres
	Thinning	May 1-31 -- all acreage	90	0.2 acre
	Picking for shipping and canning	July 15-31 -- 10 per cent of crop August 1-31 -- 90 per cent of crop	90	1 ton
	Picking for drying	July 15-31 -- 10 per cent of crop August 1-31 -- 90 per cent of crop	90	2,500 pounds

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Table 2 continued.

Crop	Operation	Time of need	Per cent of work done by seasonal help	Output per man-day
Peaches (cont.)	Cutting for drying	July 15-31 -- 10 per cent of job August 1-31 -- 90 per cent of job	90	1 ton (= 40 boxes)
	Other labor in dry yards	August 1-31 -- 90 per cent of job September 1-10 -- 10 per cent of job	90	11.5 man-hours per fresh ton†
Plums	Pruning	November -- 10 per cent of acreage December -- 30 per cent of acreage January -- 30 per cent of acreage February -- 30 per cent of acreage	75	0.4 acre
	Thinning (25 per cent of acreage)	April 15-30 -- 50 per cent of job May 1-15 -- 50 per cent of job	100	0.2 acre
	Picking	June 20-30 -- 5 per cent of crop July 1-20 -- 95 per cent of crop	90	800 pounds
Prunes	Pruning	November 15-30 -- 10 per cent of job December 1-31 -- 30 per cent of job January 1-31 -- 30 per cent of job February 1-28 -- 30 per cent of job	75	0.5 acre
	Picking up	September 1-30 -- all of crop	90	1,500 pounds
	Dipping and drying	September 1-30 -- 75 per cent of job October 1-15 -- 25 per cent of job	75	8.3 man-hours per fresh ton‡
Walnuts	Shaking off, picking up, and hulling by hand	October 1-31 -- all of crop	50	200 pounds

* It is estimated that about 50 per cent of alfalfa acreage is in small holdings on which operators do all work or exchange work with neighbors, requiring no seasonal help.

† Cotton picking by months based on "Cotton Production in the United States -- crop of 1935", U.S. Department of Commerce, Bureau of the Census.

‡ From Christie, A. W. and L. C. Barnard. The principles and practice of sun-drying fruit. California Agr. Exp. Sta. Bul. 388:40-60. 1925.

Findings of Seasonal Labor Needs.--- Details and summaries of seasonal labor requirements of Kings County agriculture are presented as table 3. The "size of task" are figures drawn from table 1, in terms of either acreage or output in tons, crates, boxes, or whatever unit is commonly used. The "output per man-day" is an average figure for the entire acreage or output figured in crates, hampers, boxes, or other units as indicated in the table. If the work is of a nature that requires a crew -- different members of which perform different tasks --- then the average shown is per man based on the entire crew. Length of day is 9 hours, November to February; 10 hours, March to October; unless otherwise stated. Wide variations in output occur between farm and farm, field and field, and season and season, because of differences in soil types, climatic conditions, weeds, yields, and other factors influencing the amount of work that a laborer can perform in a given day. Moreover, the basis of output is a mature, experienced male worker without reference to use of women, children, and more or less inexperienced help that is sometimes used in connection with certain of the tasks requiring use of seasonal workers. The column headed "available days" reflects (a) limitations set from the period within which the work must be performed because of the nature of the task, such as transplanting, thinning, weeding, and cutting, and (b) available days as determined by weather conditions, inclement weather reducing the number of days when a required task can be performed. The "required number of individuals" is given in terms of workers as noted above in connection with "output per man-day."

It is probable that the estimated number of workers required, as recorded in table 3, will often be too low, for the reason that "peaks" frequently occur, during which an unusually large proportion of the job is done in a very short period. This would naturally require a much greater number of workers than when the work is spread over a longer period, even though the total amount of labor (in man-days) remains the same.

TABLE 3

Seasonal Labor Needs -- Kings County -- by Months and Tasks

Month	Crop and task	Size of task	Output per man-day	Required man-days	Available days	Required number of workers*
January	Cotton: Picking	2,764,500 pounds †	200 pounds	13,823	22	629
	Apricots: Pruning	542 acres ‡	0.25 acre	2,168	22	99
	Brush burning	271 acres ‡	2.0 acres	136	22	7
	Grapes -- Thompson: Pruning	689 acres ‡	0.5 acre	1,378	22	63
	other varieties: Pruning	3,236 acres ‡	0.66 acre	4,904	22	223
	Thompson: Tying	459 acres ‡	1.5 acres	306	22	14
	Olives: Picking for oil	27 tons ‡	500 pounds	108	22	5
	Peaches: Pruning	543 acres ‡	0.25 acre	2,172	22	99
	Brush burning	271 acres ‡	2.0 acres	136	22	7
	Plums: Pruning	31 acres ‡	0.4 acre	78	22	4
	Prunes: Pruning	103 acres ‡	0.5 acre	206	22	10
				25,415	22	1,156 man-months
February	Cotton: Picking	921,000 pounds †	200 pounds	4,605	23	201
	Apricots: Pruning	541 acres ‡	0.25 acre	2,164	23	95
	Brush burning	271 acres ‡	2.0 acres	136	23	6
	Grapes -- Thompson: Pruning	689 acres ‡	0.5 acre	1,378	23	60
	other varieties: Pruning	3,236 acres ‡	0.66 acre	4,904	23	214
	Thompson: Tying vines	459 acres ‡	1.5 acres	306	23	14
	Olives: Picking for oil	13 tons	500 pounds	52	23	3
	Peaches: Pruning	543 acres ‡	0.25 acre	2,172	23	95
	Brush burning	271 acres ‡	2.0 acres	136	23	6
	Plums: Pruning	31 acres	0.4 acre	78	23	4
	Prunes: Pruning	103 acres ‡	0.5 acre	206	23	9
				16,137	23	702 man-months
March	Grapes -- Thompson: Pruning	172 acres ‡	0.5 acre	344	12	29 (From 1-15)
	other varieties: Pruning	809 acres ‡	0.66 acre	1,226	12	103 (From 1-15)
	Thompson: Tying	230 acres ‡	1.5 acres	154	12	13 (From 1-15)
				1,724	24	72 man-months
April	Alfalfa: Mowing	1,508 acres ‡	8.0 acres	189	24	8
	Raking	1,508 acres ‡	16.0 acres	95	24	4
	Shocking by hand	1,508 acres ‡	5.0 acres	302	24	13

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Table 3 continued.

Month	Crop and task	Size of task	Output per man-day	Required man-days	Available days	Required number of workers*
April (cont.)	Cotton: Chopping	2,950 acres	2.5 acres	1,180	12	99 (From 15-30)
	Apricots: Thinning by hand	650 acres ‡	0.2 acre	3,250	12	271 (From 1-15)
	Thinning by poles	361 acres ‡	0.5 acre	722	12	61 (From 1-15)
	Plums: Thinning	73 acres	0.2 acre	365	12	31 (From 15-30)
				6,103	24	255 man-months
May	Alfalfa: Mowing	4,522 acres ‡	8 acres	566	26	22
	Raking	4,522 acres ‡	16 acres	283	26	11
	Shocking by hand	4,522 acres ‡	5 acres	905	26	35
	Stacking	4,400 tons ‡	4 tons	1,100	26	43
	Baling	1,251 tons ‡	5 tons	251	26	10
	Cotton: Chopping	11,800 acres	2.5 acres	472	26	19
	Grain: Harvesting by "combine"	3,270 acres ‡	7.0 acres ♂	468	5	94 (From 25-31)
	Hauling	62,450 sacks ‡	300 sacks	209	5	42 (From 25-31)
	Sorghum for grain: Hoeing	167 acres	2.5 acres	67	26	3
	Apricots: Thinning by hand	650 acres ‡	0.2 acre	3,250	13	250 (From 1-15)
	Thinning by poles	361 acres ‡	0.5 acre	722	13	56 (From 1-15)
	Picking for fresh use	914 tons	1,200 pounds	1,524	9	170 (From 20-31)
	Peaches: Thinning	2,931 acres ‡	0.2 acre	14,655	26	564
	Plums: Thinning	73 acres	0.2 acre	365	13	29 (From 1-15)
				24,837	26	956 man-months
June	Alfalfa: Mowing	4,522 acres ‡	8 acres	566	26	22
	Raking	4,522 acres ‡	16 acres	283	26	11
	Shocking by hand	4,522 acres ‡	5 acres	905	26	35
	Stacking	4,400 tons ‡	4 tons	1,100	26	43
	Baling	1,251 tons ‡	5 tons	251	26	10
	Cotton: Chopping	2,950 acres	2.5 acres	1,180	13	91 (From 1-15)
	Irrigating	11,800 acres ‡	5.0 acres ♂	2,360	26	91
	Flax: Harvesting by "combine"	500 acres ‡	5.0 acres	100	26	4
	Grain: Harvesting by "combine"	13,080 acres ‡	7.0 acres ♂	1,869	26	72
	Hauling	249,802 sacks ‡	300 sacks	833	26	33
	Sorghum for grain: Hoeing	167 acres	2.5 acres	67	26	3
	Apricots: Picking for fresh use	2,741 tons	1,200 pounds	4,569	26	176
	Picking for drying (by hand)	1,728 tons	1,200 pounds	2,880	20	144 (From 7-30)
	Picking for drying (by shaking)	9,792 tons	1,800 pounds	10,880	20	544 (From 7-30)

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Table 3 continued.

Month	Crop and task	Size of task	Output per man-day	Required man-days	Available days	Required number of workers*
June (cont.)	Apricots (cont.)					
	Cutting for drying	10,368 tons ‡	750 pounds	27,648	20	1,383 (From 7-30)
	Other dry-yard work	9,720 tons	¶	10,692	20	535 (From 7-30)
	Plums: Picking	20 tons ‡	800 pounds	50	8	7 (From 20-30)
				66,233	26	2,548 man-months
July	Alfalfa: Mowing	4,522 acres ‡	8 acres	566	26	22
	Raking	4,522 acres ‡	16 acres	283	26	11
	Shocking by hand	4,522 acres ‡	5 acres	905	26	35
	Stacking	4,400 tons ‡	4 tons	1,100	26	43
	Baling	1,251 tons ‡	5 tons	251	26	10
	Cotton: Irrigating	11,800 acres ‡	5.0 acres ¶	2,360	26	91
	Flax: Harvesting by "combine"	500 acres ‡	5.0 acres	100	26	4
	Grain: Harvesting by "combine"	13,080 acres ‡	7.0 acres ¶	1,869	26	72
	Hauling	249,802 sacks ‡	300 sacks	833	26	33
	Sorghum for grain: Hoeing	166 acres	2.5 acres	67	26	3
	Apricots: Picking for drying (by hand)	312 tons	1,200 pounds	520	3	174 (From 1-4)
	Picking for drying (by shaking)	1,768 tons	1,800 pounds	1,965	4	492 (From 1-4)
	Cutting for drying	2,592 tons ‡	750 pounds	6,912	4	1,728 (From 1-4)
	Other dry-yard labor	3,240 tons ‡	¶	3,564	9	396 (From 1-10)
	Peaches: Picking for shipping and canning	262 tons ‡	1.0 ton	262	13	21 (From 1-15)
	Picking for drying	1,485 tons ‡	2,500 pounds	1,188	13	92 (From 1-15)
	Cutting for drying	1,485 tons ‡	1.0 ton	1,485	13	115 (From 15-31)
	Plums: Picking	375 tons ‡	800 pounds	938	18	53 (From 1-20)
				25,168	26	968 man months
August	Alfalfa: Mowing	3,350 acres ‡	8 acres	419	26	17
	Raking	3,350 acres ‡	16 acres	210	26	9
	Shocking by hand	3,350 acres ‡	5 acres	670	26	26
	Stacking	2,860 tons ‡	4 tons	715	26	28
	Baling	813 tons ‡	5 tons	163	26	7
	Cotton: Irrigating	11,800 acres ‡	5.0 acres ¶	2,360	26	91
	Flax: Harvesting by "combine"	250 acres ‡	5.0 acres	50	13	4 (From 1-15)
	Grain: Harvesting by "combine"	3,270 acres ‡	7.0 acres ¶	468	13	36 (From 1-15)
	Hauling	62,450 sacks	300 sacks	209	13	17 (From 1-15)

Table continued on next page.

Table 3 continued.

Month	Crop and task	Size of task	Output per man-day	Required man-days	Available days	Required number of workers*
August (cont.)	Grapes -- Thompsons: Picking for raisins	16,000 tons	3,000 pounds	10,667	26	411
	Peaches: Picking for shipping and canning	2,357 tons ‡	1.0 ton	2,357	26	91
	Picking for drying	13,365 tons ‡	2,500 pounds	10,692	26	412
	Cutting for drying	13,365 tons ‡	1.0 ton	13,365	26	515
	Other dry-yard labor	13,365 tons ‡	¶	15,363	26	591
				57,708	26	2,220 man-months
September	Alfalfa: Mowing	3,350 acres ‡	8 acres	419	26	17
	Raking	3,350 acres ‡	16 acres	210	26	9
	Shocking by hand	3,350 acres ‡	5 acres	670	26	26
	Stacking	2,860 tons ‡	4 tons	715	26	28
	Baling	813 tons ‡	5 tons	163	26	7
	Cotton: Picking	553,000 pounds †	250 pounds	2,212	13	171 (From 15-30)
	Sorghum for grain: Cutting by hand	54 acres	0.75 acre	72	8	9 (From 20-30)
	Grapes: Picking for shipping (field packing)	1,500 tons	30 boxes ‖	3,572	26	138
	Picking for wineries	7,500 tons	1.5 tons	5,000	13	385 (From 15-30)
	Raisins: Turning trays	10,800 tons ‡	1,500 trays**	655	22	30 (From 5-30)
	Rolling paper trays	2,000 tons ‡	1,500 trays**	122	13	10 (From 15-30)
	Stacking wooden trays	2,000 tons ‡	1,000 trays**	182	13	14 (From 15-30)
	Boxing and hauling in	667 tons ‡	2.5 tons	267	13	21 (From 15-30)
	Olives: Picking for pickling	74 tons	400 pounds	370	13	29 (From 15-30)
	Peaches: Dry-yard labor	1,485 tons ‡	¶	1,707	8	214 (From 1-10)
	Prunes: Picking up	2,048 tons ‡	1,500 pounds	2,731	26	106
	Dipping and drying	1,280 tons ‡	¶	1,063	26	41
				20,130	26	775 man-months
October	Alfalfa: Mowing	3,350 acres ‡	8 acres	419	25	17
	Raking	3,350 acres ‡	16 acres	210	25	9
	Shocking by hand	3,350 acres ‡	5 acres	670	25	27
	Stacking	2,860 tons ‡	4 tons	715	25	29
	Baling	813 tons ‡	5 tons	163	25	7
	Cotton: Picking	12,717,000 pounds †	250 pounds	50,868	25	2,035

Table continued on next page.

Table 3 continued.

Month	Crop and task	Size of task	Output per man-day	Required man-days	Available days	Required number of workers*
October (cont.)	Sorghum for grain: Cutting by hand	269 acres	0.75 acre	359	25	15
	Threshing by stationary machine	2,690 sacks †	80 sacks	34	25	2
	Harvesting by "combine"	2,369 acres ‡	5 acres	474	25	19
	Grapes: Picking for shipping (field packing)	9,500 tons	30 boxes ‖	22,620	25	905
	Picking for winery	37,500 tons	1.5 tons	25,000	25	1,000
	Raisins: Turning trays	3,600 tons ‡	1,500 trays**	219	8	28 (From 1-10)
	Rolling paper trays	4,000 tons ‡	1,500 trays**	243	25	10
	Stacking wood trays	4,000 tons ‡	1,000 trays**	364	25	15
	Boxing and hauling in	1,333 tons ‡	2.5 tons	534	25	22
	Olives: Picking for pickling	294 tons	400 pounds	1,470	25	59
	Prunes: Dipping and drying	426 tons ‡	¶	354	12	30 (From 1-15)
	Walnuts: Shaking off, picking up, hulling by hand	103,100 pounds ‡	200 pounds	516	25	21
				105,232	25	4,210 man-months
November	Cotton: Picking	8,017,650 pounds †	250 pounds	32,071	24	1,337
	Sorghum for grain: Cutting by hand	215 acres	0.75 acre	287	24	12
	Threshing by stationary machine	2,690 sacks ‡	80 sacks	34	24	2
	Harvesting by "combine"	2,369 acres ‡	5 acres	474	24	20
	Apricots: Pruning	181 acres ‡	0.25 acre	724	24	31
	Brush burning	90 acres ‡	2.0 acres	45	24	2
	Grapes: Picking for shipping (field packing)	1,500 tons	30 boxes ‖	3,572	24	149
	Picking for winery	5,000 tons	1.5 tons	3,334	12	278 (From 1-15)
	Olives: Picking for pickling	122 tons	400 pounds	610	17	36 (From 1-21)
	Plums: Pruning	11 acres ‡	0.4 acre	28	24	2
	Prunes: Pruning	34 acres ‡	0.5 acre	68	12	6 (From 15-30)
				41,247	24	1,719 man-months
December	Cotton: Picking	3,379,500 pounds †	200 pounds	16,898	23	735
	Apricots: Pruning	542 acres ‡	0.25 acre	2,168	23	95
	Brush burning	271 acres ‡	2.0 acres	136	23	6
	Grapes -- Thompsons: Pruning	172 acres ‡	0.5 acre	344	23	15
	Other varieties: Pruning	809 acres ‡	0.66 acre	1,226	23	54
	Olives: Picking for oil	13 tons	500 pounds	52	23	3

Table continued on next page.

Table 3 continued.

Month	Crop and task	Size of task	Output per man-day	Required man-days	Available days	Required number of workers*
December (cont.)	Peaches: Pruning	543 acres ‡	0.25 acre	2,172	23	95
	Brush burning	272 acres ‡	2.0 acres	136	23	6
	Plums: Pruning	31 acres ‡	0.4 acre	78	23	4
	Prunes: Pruning	103 acres	0.5 acre	206	23	9
				23,416	23	1,019 man-months

* On monthly basis unless otherwise noted.

† Seed cotton -- For September, October, and November, it is estimated that it takes 1,350 pounds of seed cotton to make a bale; after the frost -- that is, during December, January, and February -- this figure is estimated to be 1,500 pounds.

‡ Estimated portion of job done by seasonal workers.

ϕ Rate of work for a 12-hour day.

¶ Dry-yard labor, other than cutting, estimated to be as follows:

Apricots - 11 man-hours per fresh ton
Peaches - 11.5 man-hours per fresh ton
Prunes - 8.3 man-hours per fresh ton

|| Boxes of 28 pounds net of grapes.

** Trays of 22 pounds net, fresh weight; 5 pounds net, dry weight.

TABLE 4

Summary of Seasonal Labor Needs by Months
Kings County
1935

Month	Required man-days of seasonal labor	Available days	Required man-months of seasonal labor
January	25,415	22	1,156
February	16,137	23	702
March	1,724	24	72
April	6,103	24	255
May	24,837	26	956
June	66,233	26	2,548
July	25,168	26	968
August	57,708	26	2,220
September	20,130	26	775
October	105,232	25	4,210
November	41,247	24	1,719
December	23,416	23	1,019
Total	413,350	--	16,600

Notes

Notes on Table 2.-- Data concerning "time of need" as shown in this table break down required seasonal labor into the period in which the work is performed in order to permit a subsequent determination of labor needs by months (table 3). Some operations are performed only to a limited extent with seasonal labor. For instance, only about 50 per cent of the labor in harvesting grain is done by seasonal workers. When a job extends over several different months, the proportionate amount for each month is shown.

The amount of work done each month is based on the cropping system followed during 1935. The allotting of amounts of work is based on findings concerning local farm practices, and required time to "make" a crop resulting from inquiry of producers, and records of carlot shipments, the latter proving helpful in fixing dates of planting and of subsequent tasks involved in producing certain crops. Proportionate amounts of output harvested each month were determined from data of local practices with respect to harvesting, and from carlot shipments of perishable products. Records of truck shipments were also used when available.

Notes on Table 3.-- Table 3 is the condensed summary of labor needs as worked out for Kings County as a result of findings pertinent to 1935. The data are presented by months with the tasks which were performed in each month indicated by both crop and task. The size of the job was calculated from the data appearing in table 1 (acreage and production) and table 2 (task, time of performance, and percentage of work pertinent to a given month). The output per man-day was calculated as indicated in the foreword presenting table 3. The number of required man-days is a result of dividing the size of task by output per man-day. The available days for the different tasks involve two variables. The first is the number of days when field work is possible because of favorable weather conditions.

The basis for this column was determined from a study of the monthly weather charts of the United States Weather Bureau for the years 1933, 1934, and 1935. These data indicated available days per month as follows (based on a 26-day working

month without allowance for holidays):

Month	Available days	Length of work day	Month	Available days	Length of work day
		hours			hours
January	22	9	July	26	10
February	23	9	August	26	10
March	24	10	September	26	10
April	24	10	October	25	10
May	26	10	November	24	9
June	26	10	December	23	9

Source of data: Based on precipitation records of the Hanford station of the United States Weather Bureau for the years 1933, 1934, and 1935.

The second factor influencing the number of available days was the size of the job. If the output was only a few cars, then the number of days was limited to the time needed to get out those cars efficiently. If a field operation had to be performed in a period less than the number of available days in the month, then the specific number of days was noted. These restrictions are shown in parentheses. For example, in July, the picking of peaches was limited to the last half of the month.

The totals of table 3 show the total required man-days of needed seasonal labor, the available days for field work during the month, and the necessary number of men (as defined in the opening paragraph of table 3) required on a monthly basis to care for the tasks ordinarily performed by seasonal workers.

In an area such as Kings County, involving a variety of annual crops, the findings as set forth in this report are bound to fluctuate materially from year to year, because of the market outlook upon what and how much acreage is planted, and when it is planted; because of variable seasonal conditions affecting yields, time of performing operations, and available days; and because of harvesting operations on certain crops being speeded up to supply a good market, or retarded to avoid a poor one, resulting in marked variations in the need for harvest labor.

month without allowance for holidays:

Month	Available days	Length of work day	Month	Available days	Length of work day
		Hours			Hours
January	22	9	July	26	10
February	23	9	August	26	10
March	24	10	September	26	10
April	24	10	October	25	10
May	26	10	November	24	9
June	26	10	December	23	9

Source of data: Based on precipitation records of the Hanford station of the United States Weather Bureau for the years 1933, 1934, and 1935.

The second factor influencing the number of available days was the size of the job. If the output was only a few cars, then the number of days was limited to the time needed to get out those cars efficiently. If a field operation had to be performed in a period less than the number of available days in the month, then the specific number of days was noted. These restrictions are shown in parentheses. For example, in July, the picking of peaches was limited to the last half of the month.

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In an area such as Kings County, involving a variety of annual crops, the findings as set forth in this report are bound to fluctuate materially from year to year, because of the market outlook for that and how much acreage is planted, and when it is planted; because of variable seasonal conditions affecting yields, time of performing operations, and available days; and because of harvesting operations on certain crops being speeded up to supply a good market, or retarded to avoid a poor one, resulting in marked variations in the need for harvest labor.